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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,917	08/29/2003	Hiroshi Tanada	1602-0182P	7979

2292 7590 06/29/2005

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EXAMINER
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TRAN, DIEM T

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/650,917	<b>Applicant(s)</b> TANADA ET AL.	
	<b>Examiner</b> Diem Tran	<b>Art Unit</b> 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.  
 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-14 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:  
         1. ☒ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

-This office action is in response to the amendment filed on 3/16/05. In this amendment, claims 1, 6, 9, 10, 12 have been amended. The amendments to the specification and abstract have been approved. Overall, claims 1-14 are pending in this application.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

*Claims 1-7, 9, 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US Patent 5,538,697) in view of Tsuzuki et al. (US Patent 6,185,933).*

Regarding claim 1, Tsuzuki discloses an exhaust gas purification apparatus for an engine, comprising:

a catalytic converter provided in an exhaust path of said engine and including a carrier, an HC absorbent carried on said carrier for absorbing HC in exhaust gas of said engine, an HC purifying catalyst carried on said carrier and capable of purifying the HC desorbed from said HC absorbent (see col. 1, lines 66-67, col. 2, lines 1-12); and a transition metal carried on said carrier for absorbing CO in the exhaust gas (see col. 12, lines 10-14); and control apparatus for controlling operation of said engine, said control apparatus including HC desorption timing estimation means for estimating a timing at which the HC is desorbed from said HC absorbent and control means for controlling an air fuel ratio upon starting said engine ratio richer than

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stoichiometric air fuel ratio to start operation of said engine (see col. 7, lines 7-11) and changing over the air fuel ratio leaner than the stoichiometric air fuel ratio at the timing at which the HC is desorbed based on an output of said HC desorption timing estimation means (see col. 2, lines 39-53, col. 11, lines 15-21, 35-52); however, fails to disclose maintaining the air fuel ratio at the ratio leaner than the stoichiometric air fuel ratio during the HC desorption for a period of time determined based on an actual temperature of the HC absorbent. Tsuzuki teaches that it is conventional in the art, to maintain the air fuel ratio at the ratio leaner than the stoichiometric air fuel ratio during the HC desorption for a period of time determined based on an exhaust gas temperature indicative of HC absorbent temperature (see col. 3, lines 38-42).

It would have been obvious to one having ordinary skill in the art, to have utilized the teaching of Tsuzuki in the apparatus of Abe, since the use thereof would have provided an effective means to timely end the HC desorption process.

Regarding claim 2, Abe further discloses that said HC absorbent is carried in a layered state on a surface of said carrier, and said HC purifying catalyst is carried in a layered state on a surface of the layer of said absorbent (see col. 9, lines 64-67, col. 10, lines 1-22).

Regarding claims 3, 4, Abe further discloses that said transition metal carried in a layer of said HC purifying catalyst and said transition metal is nickel (see col. 9, lines 58-63).

Regarding claim 5, the modified Abe apparatus discloses all the claimed limitations as discussed in claim 4 above, however, fails to disclose that the nickel is contained by approximately 20 to 30 g/L in the form of NiO.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum range of the concentration of nickel, since it

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has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 6, Abe further discloses that a temperature detection means for detecting a temperature of said HC absorbent, and said HC desorption timing estimation means estimating the timing at which the HC is desorbed based on an output of said temperature detection means (see col. 11, lines 14-17).

Regarding claim 7, Abe further discloses that said HC desorption timing estimation means estimates the timing at which the HC is desorbed based on an elapsed period of time after the starting of said engine (see col. 11, lines 16-20).

Regarding claim 9, the modified Abe apparatus discloses all the claimed limitations as discussed in claim 7 above, however, fails to disclose estimating the timing at which the HC is desorbed based on temperature information detected by said water temperature detection means.

It is well known to those with ordinary skill in the art that a HC adsorbent temperature can be derived from the cooling water temperature of the engine, so that a time at which the HC is desorbed from the HC absorbent in Abe can be estimated based on the temperature information of the engine cooling water. Therefore, such disclosure by Abe et al. is notoriously well known in the art so as to be proper for official notice.

Regarding claim 11, Abe further discloses that said HC absorbent is zeolite (see col. 8, lines 49-58).

Regarding claim 12, Abe further discloses an air fuel ratio detection means for detecting an air fuel ratio after said catalytic converter, said HC desorption timing estimation means

estimating the timing at which the HC is desorbed based on an output of said air fuel ratio detection means (see col. 7, lines 57-65).

Regarding claim 13, Abe further discloses said catalytic converter is provided at a downstream portion of said exhaust path (see Figure 11).

Regarding claim 14, Abe further discloses said engine (1) and said catalytic converter (21) are directly connected to each other without intervention of any other catalytic converter (see Figure 11).

*Claims 8, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US Patent 5,538,697) in view of Tsuzuki et al. (US Patent 6,185,933) as applied to claim 7 above, and further in view of Yasui et al. (US Patent 6,681,567).*

Regarding claim 8, the modified Abe apparatus discloses all the claimed limitations as discussed in claim 7 above, however, fails to disclose estimating the timing at which the HC is desorbed based on a total fuel injection amount of said engine after the starting of said engine. Yasui teaches that it is conventional in the art, to estimate the timing at which the HC is desorbed based on a total fuel injection amount of said engine after the starting of said engine (see col. 12, lines 1-7).

It would have been obvious to one having ordinary skill in the art, to have utilized the teaching of Yasui in the modified apparatus of Abe, since the use thereof would have provided an effective means to accurately determine when the HC absorbent begins to desorb hydrocarbon.

Regarding claim 10, the modified Abe apparatus discloses all the claimed limitations as discussed in claim 8 above, however, fails to disclose estimating the timing at which the HC is desorbed based on temperature information detected by said water temperature detection means.

It is well known to those with ordinary skill in the art that a HC adsorbent temperature can be derived from the cooling water temperature of the engine, so that a time at which the HC is desorbed from the HC adsorbent in Abe can be estimated based on the temperature information of the engine cooling water. Therefore, such disclosure by Abe et al. is notoriously well known in the art so as to be proper for official notice.

#### *Response to Arguments*

Applicant's arguments filed on 3/16/05 have been fully considered but they are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

*Conclusion*

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner can normally be reached on Monday -Friday from 8:30 a.m.- 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 800-786-9199 (toll-free).



Diem Tran  
Patent Examiner  
Art unit 3748

DT  
June 21, 2005



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